इंटरनेट मानक

Disclosure to Promote the Right To Information

Whereas the Parliament of India has set out to provide a practical regime of right to information for citizens to secure access to information under the control of public authorities, in order to promote transparency and accountability in the working of every public authority, and whereas the attached publication of the Bureau of Indian Standards is of particular interest to the public, particularly disadvantaged communities and those engaged in the pursuit of education and knowledge, the attached public safety standard is made available to promote the timely dissemination of this information in an accurate manner to the public.

“जानने का अधिकार, जीने का अधिकार”
Mazdoor Kisan Shakti Sangathan
“The Right to Information, The Right to Live”

“पुराने को छोड नये के तरफ”
Jawaharlal Nehru
“Step Out From the Old to the New”

IS 10260-3 (1982): Terms, definitions and classification of plain bearings, Part III: Lubrication [PGD 13: Bearing]

“ज्ञान से एक नये भारत का निर्माण”
Satyanarayan Gangaram Pitroda
“Invent a New India Using Knowledge”

Act Number 22 of 2005
The Indian Parliament
RIGHT TO INFORMATION

Made Available By
Public.Resource.Org

“ज्ञान एक ऐसा खजाना है जो कभी चुराया नहीं जा सकता है”
Bhartṛhari—Nītiśatakam
“Knowledge is such a treasure which cannot be stolen”

BLANK PAGE

BRUTUM FULMEN

IGNORANTIA JURIS NON EXCUSAT

PROTECTED BY COPYRIGHT

UDC 621.822.5 : 621-72 : 001.4

IS : 10260 (Part III)-1982

Indian Standard (Reaffirmed 2005)

TERMS, DEFINITIONS AND CLASSIFICATION OF PLAIN BEARING

PART III LUBRICATION

1. Scope — Covers the most commonly used terms, with their definitions, applied in the field of plain bearings lubrication.

1.1 For some terms and word combinations their short forms are given which are recommended for use when they are unambiguous; self explanatory terms are given without definitions.

2. General Terms

2.1 *Lubrication (Type of)* — Lubricant action, which results in reducing of wear, surface deterioration and/or friction force.

2.2 *Lubrication (Method of)* — Supplying of a lubricant to rubbing surfaces.

2.3 *Lubricant* — Substance applied on the rubbing surfaces to reduce wear surface deterioration and/ or friction force.

3. Types of Lubrication

3.1 Types of lubrication in the plain bearing shall be as follows.

3.1.1 *According to physical state of the lubricants:*

a) Gas lubrication,
b) Liquid lubrication, and
c) Solid film lubrication.

3.1.2 *According to the separation of the rubbing surfaces by a lubricant film:*

a) Hydrodynamic lubrication,
b) Hydrostatic lubrication,
c) Aerodynamic lubrication,
d) Aerostatic lubrication,
e) Elasto hydrodynamic lubrication,
f) Boundary lubrication, and
g) Semi-liquid lubrication.

3.2 *Gas Lubrication* — Type of lubrication in which the rubbing surfaces of the relatively moving bodies are separated by a gaseous lubricant.

3.3 *Liquid Lubrication* — Type of lubrication in which the rubbing surfaces of the relatively moving bodies are separated by a liquid lubricant.

3.4 *Solid Film Lubrication* — Type of lubrication in which the rubbing surfaces of the relatively moving bodies are separated by a solid lubricant.

3.5 *Hydrodynamic Lubrication* — Liquid lubrication in which the rubbing surfaces are separated completely due to the pressure, self generated in a liquid film between the relatively moving surfaces.

3.6 *Hydrostatic Lubrication* — Liquid lubrication in which the rubbing surfaces of the bodies in relative motion or in a state of rest are completely separated by the externally pressurized liquid supplied into the gap between the surfaces.

3.7 *Aerodynamic Lubrication* — Gas lubrication in which complete separation of rubbing surfaces is the result of pressure self-generated in the gas film by the relative motion of the surfaces.

3.8 *Aerostatic Lubrication* — Gas lubrication in which the rubbing surfaces of the bodies in relative motion or in a state of rest are completely separated by the externally pressurized gas supplied into the gap between the surfaces.

Plain Bearings Sectional Committee, EDC 80 [Ref : Doc : EDC 80 (3837)]

Adopted 21 June 1982	© February 1983, ISI	Gr 2

INDIAN STANDARDS INSTITUTION
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

3.9 *Elasto-Hydrodynamic Lubrication* — Type of lubrication in which friction and film thickness of the liquid lubrication between the relatively moving surfaces are determined by the elastic properties of the materials as well as by the rheologic properties of the lubricant.

3.10 *Boundary Lubrication* — Type of lubrication in which friction and wear between to surfaces in relative motion are determined by the properties of the surface and by the properties of the lubricant other than bulk viscosity.

3.11 *Semi-Liquid Lubrication* — Type of lubrication in which hydrodynamic lubrication is partially realised.

4. Methods of Lubrication

4.1 Methods of lubrication in the plain bearing shall be as follows:

4.1.1 *According to periodicity of application of lubricant:*

a) Continuous lubrication, and
b) Periodical lubrication,

4.1.2 *According to methods of renewing the lubricant*:

a) Circulating lubrication,
b) Life-time lubrication, and
c) Once-through lubrication.

4.1.3 *According to the way of applying the lubricant to the friction surface:*

a) Force-feed lubrication,
b) Dip-feed lubrication,
c) Ring lubrication,
d) Drop-feed lubrication,
e) Oil fog lubrication (oil mist lubrication),
f) Pad lubrication,
g) Wick lubrication,
h) Rotaprint lubrication, and
i) Solid-film coating.

4.2 *Circulating Lubrication* — Method of lubrication in which the lubricant having passed the rubbing surfaces is mechanically recirculated to them.

4.3 *Life-Time Lubrication* — Method of lubrication in which the lubricant is applied only before the system is put into operation.

4.4 *Once-Through Lubrication* — Method of lubrication in which the lubricant is periodically or continuously delivered to the rubbing surfaces without returning to the lubricating system.

4.5 *Force-Feed Lubrication* — Method of lubrication in which the lubricant is supplied to the rubbing surface under pressure.

4.6 *Dip-Feed Lubrication* — Method of lubrication in which the rubbing surface is partially, permanently or periodically submerged into a bath containing liquid lubricant.

4.7 *Ring Lubrication* — Method of lubrication in which the lubricant is carried to the rubbing surfaces with a ring driven into rotation by a shaft.

Note — The ring may be fixed on a rotating shaft.

4.8 *Drop-Feed Lubrication* — Method of lubrication in which the lubricant is supplied to the rubbing surfaces in the form of drops at regular intervals.

4.9 *Oil Fog Lubrication (Oil Mist Lubrication)* — Method of lubrication in which the lubricant is delivered to the friction surface as mist or fog produced by injecting the lubricant into a stream of air or other gas.

4.10 *Pad Lubrication* — Method of lubrication in which the liquid lubricant is delivered to the rubbing surface area by a contacting pad of a moistened material possessing capillary properties.

4.11 *Wick Lubrication* — Method of lubrication in which the lubricant is delivered to the rubbing surface by means of a wick.

4.12 *Rotaprint Lubrication* — Method of lubrication in which the surface of the body is supplied with the solid lubricant detaching from a special lubricating solid body pressed to the surface.

4.13 *Solid-Film Coating* — Method of lubrication when the rubbing surface is coated with a solid film before the part is put into operation.

5. Lubricants and their Components

5.1 Lubricants and their components in the plain bearing shall be as follows:

5.1.1 *According to their physical state*:

- a) Gaseous lubricant,
- b) Liquid lubricant,
- c) Grease, and
- d) Solid lubricant.

5.1.2 *According to the presence of additive*:

- a) Base oil,
- b) Lubricant with additive.

5.1.3 *According to their origin*:

- a) Mineral oil,
- b) Petroleum lubricant,
- c) Vegetable lubricant,
- d) Animal lubricant,
- e) Synthetic lubricant.

5.2 *Lubricating Oil* — Oil, usually refined, primarily intended to reduce friction between moving surfaces.

5.3 *Grease* — Semi-solid or solid lubricant consisting essentially of a stabilized mixture of mineral, or synthetic oil with soaps or other thickeners. It may contain other ingredients.

5.4 *Base Oil* — Oil to which one or several additives have to be added to obtain a finished product.

5.5 *Mineral Oil* — Oil consisting of a mixture of hydrocarbons either naturally occurring or obtained by the treatment of materials of mineral origin.

5.6 *Petroleum Lubricant* — Oil refined in a usual way, obtained from crude oil.

5.7 *Additive* — Material added to the lubricant for the purpose of imparting new properties or of enhancing existing properties.

5.8 *Solid Lubricant Binder (Binder)* — Material which promotes adherence between particles of a solid lubricant and between them and the surface.

5.9 *Anticorrosion Additive* — Additive which prevents, retards or limits the time of corrosion of lubricated metallic surfaces.

5.10 *Antioxidant Additive* — Additive which prevents, retards or limits the time of oxidation of a lubricant.

5.11 *Rust Preventive Additive* — Additive which prevents, retards or limits the time of rust occurring on the surfaces made from iron-base alloys.

5.12 *Antiwear Additive* — Additive preventing or reducing the rate or intensity of wear of the rubbing surfaces.

5.13 *Antiscoring Additive* — Additive which prevents, limits or retards scoring of the rubbing surfaces.

5.14 *Pour-Point Depressant* — Additive which lowers down the pour point of a liquid lubricant.

5.15 *Viscosity Index* — Number on a conventional scale used to characterize the variation of the viscosity of an oil with temperature. A high viscosity index indicates a relatively small change of viscosity with temperature and vice versa.

5.16 *Viscosity Index Improver* — Additive, usually a polymer, which lowers down a viscosity variation with temperature, thus increasing a viscosity index of an oil.

5.17 *Antifoam Additive* — Additive preventing or reducing foaming of a liquid lubricant.

5.18 *Detergent Additive* — Surface active additive which helps to keep solid particles in suspension in an oil.

5.19 *Dispersant Additive* — Additive to a liquid lubricant which increases dispersion of insoluble impurities and stability of suspension mostly at low temperature.

5.20 *Multifunctional Additive* — Additive improving simultaneously several properties of the lubricant.

5.21 *Additive Package* — Mixture of several additives ready to be added to a lubricant.

6. Basic Characteristics of Lubricants

6.1 *Viscosity* — Bulk property of a fluid, semi-fluid or semi-solid substance which causes it to resist flow. Viscosity decreases as temperature rises.

6.2 *Lubricity* — Ability of a lubricant to reduce wear and friction, other than by its purely viscous properties.

6.3 *Lubricant Compatibility (Compatibility)* — Ability of two or several lubricants to mix together without deteriorating their performance properties when they are used or stored.

6.4 *Consistency* — Ability of greases to resist deformation under the action of external force.

EXPLANATORY NOTE

The content of this standard was earlier mostly covered in IS : 4757-1968 ' Dimensions for wrapped bushes and thrust washers ' and IS : 4774-1968 ' Thin-walled bearings and thrust half-washers '. On the basis of the current International practices, the concerned committee felt the necessity to bring out a separate standard on plain bearing terminology to make it in line with ISO/DIS 4378/1 ' Plain bearing—Vocabulary: Part 1 Construction ', ISO/DIS 4378/2 ' Plain bearing—Vocabulary: Part 2 Friction and wear ' and ISO/DIS 4378/3 ' Plain bearing—Vocabulary: Part 3 Lubrication ', issued by International Organization for Standardization. The standard consists of the following parts:

IS : 10260 (Part I)-1982	Terms, definitions and classifications of plain bearing: Part I Construction
IS : 10260 (Part II)-1982	Terms, definitions and classification of plain bearing: Part II Friction and wear
IS : 10260 (Part III)-1982	Terms, definitions and classifications of plain bearing: Part III Lubrication

These standards have been prepared for the guidance of the manufacturers and consumers to assist them for the correct interpretation of the terminology related to the plain bearings.

Printed at Delhi Printers, Delhi, India